

**Third Semester B.Sc., Degree Examinations****April / May 2022***(Semester Scheme) (New Syllabus 2013-14 onwards)***ELECTRONICS****SSC720 : Paper III : Optoelectronic Devices, Amplifiers and Power Electronics**

Time: 3 hrs.]

[Max.Marks:50

**Instruction to the Candidates :**

1. Section A consists of objective type questions and should be answered in the first two pages of the answer book.
2. Write neat and Labelled diagram wherever necessary.
3. Scientific Calculator are allowed.

**SECTION - A****I. Answer ALL questions :****5X 1= 5 Marks**

1. What is an opto-coupler?
2. Which type of Feedback used in amplifier?
3. What is multivibrator?
4. A UJT has \_\_\_\_\_ PN junction.
5. An SCR may be considered as a combination of \_\_\_\_\_ and \_\_\_\_\_ Transistor.

**SECTION - B****II. Answer any FIVE questions.****5X 3= 15 Marks**

6. Explain the working of LDR.
7. State and explain the photo-Electric laws.
8. How the Bipolar junction Transistor is different from the power Transistor?
9. Explain the three performance quantities of power amplifier.
10. Explain, how the oscillations are produced in LC-circuit.
11. Distinguish between LC and RC oscillator.
12. Compare positive and negative feedback.

**SECTION - C****III. Answer any FIVE questions.****5X6= 30 Marks**

13. a) Explain the principle, construction and working of a photo- Voltaic cell.  
b) Mention few applications of LED

**(4 + 2) Marks***Contd...2*

14. a) Explain the VI- characteristic of a photo-transistor.  
b) Mention few applications of solar cell. **(4 + 2) Marks**
15. a) Derive an expression for the voltage gain of an RC- coupled amplifier in the mid-frequency region.  
b) Sketch the frequency response curve of an RC- coupled amplifier and Label the Three regions. **(4 + 2) Marks**
16. a) Show that the efficiency of class -B power amplifier is 78%.  
b) Explain the working of tuned amplifier. **(3 + 3) Marks**
17. a) Explain the working of a colpitt's oscillator.  
b) Mention few application of crystal oscillator. **(4 + 2) Marks**
18. a) Derive an expression for the frequency of Transistor Astable multi vibrator.  
b) Compare astable multivibrator, mono stable multivibrator and Bistable Multivibrator.
19. a) Explain the working of UJT.  
b) Explain the construction of TRIAC. **(3 + 3) Marks**
20. a) Explain the working of SCR.  
b) Explain the VI - characteristics of DIAC. **(3 + 3) Marks**

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**Third Semester B.Sc., Degree Examinations**

**April / May 2022**

(Semester Scheme) (Old Syllabus 2003-2013 onwards)

**ELECTRONICS**

**SSC720 : Paper III : Amplifiers and Oscillators**

Time: 3 hrs.]

[Max.Marks:50

**Instruction to the Candidates :**

1. Section A consists of objective type questions and should be answered in the first two pages of the answer book.
2. Draw neat and labelled diagram wherever necessary.

**SECTION - A**

**I. Answer ALL questions :**

**5X 1= 5 Marks**

1. What is an BJT?
2. Define faithful Amplification.
3. What is piezo-electric effect?
4. Mention types of feed back.
5. What is frequency response?

**SECTION - B**

**II. Answer any FIVE questions.**

**5X 3= 15 Marks**

6. Explain working of a transistor as an Amplifier.
7. Compare distable and astable multivibrator.
8. Explain input & output characteristics of transistor in CE code common emitter transistor.
9. Define positive and negative feed back method.
10. Explain fixed bias in a transistor amplifier.
11. Explain the working of single stage tunned Amplifier.
12. Explain Barkausen criteria for sustained Oscillation.

**SECTION - C**

**III. Answer any TWO questions.**

**2X5= 10 Marks**

13. Explain construction and working of positive clamper.
14. Explain the working of mono-stable multivibrator.

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- 15. Explain construction and working of phase-shift oscillator.
- 16. Derive an expression for voltage gain of negative feedback amplifier and mention its advantages.

**SECTION - D**

**IV. Answer any TWO questions.**

**2X10= 20 Marks**

- 17. a) Derive an expression for input impedance and voltage gain of CE-amplifier in terms of h-parameter.
- b) Explain the working of class-B pushpull Amplifier. **(6+4) Marks**
- 18. a) Explain the construction and working of R-C coupled transistor amplifier.
- b) Explain frequency response curve of RC-coupled Amplifier. **(6+4) Marks**
- 19. a) Explain construction and working of Colpitts oscillator.
- b) In a transistor Hartley Oscillator,  $L_1 = 5\text{mH}$ ,  $L_2 = 10 \text{ mH}$ ,  $C = 0.01 \text{ F}$ . Calculate frequency of oscillation and feed back factor. **(6+4) Marks**
- 20. Write a short note on:
  - (a) Tank Circuit
  - (b) Crystal Oscillator
  - (c) Multistage Amplifier **(3+3+4)**

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**Fifth Semester B.Sc., Degree Examinations****September / October 2022***(New Syllabus Semester Scheme) (2013-14 - Onwards)***ELECTRONICS****SSE721 : Paper - VI : Analog and Digital Communication**

Time: 3 hrs.]

[Max.Marks:50

**Instruction to the Candidates :**

1. Section A should be answered in the first two pages of the answer book.
2. Draw neat and Labelled diagram wherever necessary.
3. Scientific calculators are allowed.

**SECTION - A****I. Answer ALL the questions :****5X 1= 5 Marks**

1. What is modulation ?
2. In AM system, the value of modulation index lies between \_\_\_\_\_
3. FM communication is also called \_\_\_\_\_ communication.
4. The intermediate frequency of AM - SHR is \_\_\_\_\_ Hz.
5. What is quantization ?

**SECTION - B****II. Answer any FIVE questions.****5X 3= 15Marks**

6. Explain the ground wave propagation of Radio waves.
7. Derive the expression for a)  $E_m$  b)  $E_c$  and c) Modulation index of AM in terms of maximum and minimum voltages.
  - a) Wide Band FM and b) Narrow Band FM.
8. Explain the frequency spectrum of AM wave.
9. What is discriminator ? Explain its function.
10. Compare AM and FM system.
11. State sampling theorem and why it is called low pass sampling theorem.
12. What is a radio receiver ? and explain the following
  - a) Fidelity and b) Signal - to - noise ratio

**SECTION - C****III. Answer any FIVE of the following questions.****5X6= 30 Marks**

13. What is Ionosphere ? Explain the different layers of ionosphere and its role in radio wave propagation.

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14. Derive the expression for AM wave equation.
15. Explain the working of AM transmitter with a neat diagram.
16. a) Derive the expression for image frequency with an example.  
b) Write a note on Pre-emphasis and De-emphasis. **(3 + 3) Marks**
17. Explain the working of Foster - Seeley discriminator with a phasor diagram.
18. Describe the working of FM - SHR with the help of a block diagram.
19. Explain the generation of a) PAM signals and  
b) PWM signals. **(3 + 3) Marks**
20. Describe the PCM signal transmitter and receiver with the help of a block diagram.

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**Sixth Semester B.Sc., Degree Examinations**

**April / May 2022**

(Semester Scheme) (2013-14 - Onwards)

**ELECTRONICS**

**SSF721 : Paper - VIII : Advanced Communication System**

Time: 3 hrs.]

[Max.Marks:50

**Instruction to the Candidates :**

1. Section A should be answered in the first two pages of the answer book.
2. Draw neat and Labelled diagram wherever necessary.

**SECTION - A**

I. Answer ALL the questions :

5X 1= 5 Marks

1. What is Aspect - ratio ?
2. What is the function of camera tube ?
3. What are chrominance signals?
4. What are wave guides ?
5. What is G.S.L.V ?

**SECTION - B**

II. Answer any FIVE questions.

5X 3= 15Marks

6. Explain progressive scanning.
7. Explain vestigial side band (VSB) Transmission.
8. Explain the Additive mixing of primary colour signals.
9. Explain the construction and working of Schottky diode.
10. What is RADAR ? Mention the different types of RADAR.
11. Explain the cell splitting and cluster in mobile communication.
12. Briefly discuss the applications of satellite.

**SECTION - C**

III. Answer any FIVE of the following questions.

5X6= 30 Marks

13. Explain the working of monochrome T.V. Transmitter with neat block diagram.

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14. Describe the construction and working of image orthicon camera tube.
15. Describe the construction and working of monochrome picture tube.
16. Neat Block diagram, Describe the working of C.W. Radar.
17. Explain the working of Transponder, with neat block diagram.
18. Describe the function satellite earth station with neat block diagram.
19. a) Explain frequency reuse and Handoff in mobile communication.  
b) Mention the application of mobile communication.
20. Write a note on wave guides.

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**Sixth Semester B.Sc., Degree Examinations****September / October 2022**

(Semester Scheme) (2013-14 - Onwards)

**ELECTRONICS****SSF720 : Paper - VII : Microcontroller and its Applications**

Time: 3 hrs.]

[Max.Marks:50

**Instruction to the Candidates :**

1. Section A should be answered in the first two pages of the answer book.
2. Write neat and Labelled diagram wherever necessary.

**SECTION - A****I. Answer ALL the questions :****5X 1= 5 Marks**

1. Why 8051 MC is called 8-bit Micro controller ?
2. List bit addressable registers in 8051 micro controller.
3. What are Jump and Call instructions ?
4. Mention the two instructions used in stack operation.
5. What is Interfacing ?

**SECTION - B****II. Answer any FIVE questions.****5X 3= 15Marks**

6. Distinguish between microprocessor and micro controller.
7. Explain the function of following instruction.
  - a) XCH A, R3      b) MUL AB      c) ANL A, RO
8. Explain the function of following pins of 8051 MC.
  - a)  $\overline{PSEN}$  (pin 29)      b) ALE (pin 30)      c)  $\overline{EA}$  (pin 31)
9. Write a program to move a constant data to all registers.
10. Explain the register banks present in 8051 MC.
11. Explain briefly the function of TMOD register.
12. Explain the interfacing of LED with 8051 MC.

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III. Answer any FIVE of the following questions.

5X6= 30 Marks

13. a) Write the block diagram of 8051 micro controller and labelling it.  
b) Explain the salient features of 8051 microcontroller. **2+4 Marks**
14. a) Write the pin configuration of 8051 microcontroller IC and labelling it.  
b) Explain the I/O ports of 8051 MC. **2+4 Marks**
15. What is PSW register? Explain the different flags of PSW register with example for each. **6 Marks**
16. a) Explain any three types of Addressing modes with example for each.  
b) Explain any three logical instructions of 8051 MC with example for each. **3+3 Marks**
17. Describe the internal – RAM organization of 8051 MC. **6 Marks**
18. What is an interrupt? Explain the steps in executing an interrupt with relevant diagram. **6 Marks**
19. a) Explain briefly the timer / counter registers and its importance in 8051 microcontroller.  
b) Explain the role of SBUF register in serial I/O communication. **3+3 Marks**
20. Explain the block diagram of 8255 A programmable peripheral interface (PPI) IC. **6 Marks**

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